

CLAIMS

1 1. A method for polishing a metallized surface on a workpiece, said metallized
2 surface having a polish-resistant film thereon, said method comprising;
3 pretreating said metallized surface to substantially remove said film; and
4 polishing said metallized surface by creating relative movement between said
5 metallized surface and a polishing surface at a first pressure in the presence of a polishing
6 solution.

2. A method according to Claim 1 wherein said metallized surface is copper.

3. A method according to Claim 2 wherein said first pressure is substantially between 0.1 psi and 3.0 psi.

4. A method according to Claim 3 wherein said first pressure is between 0.5 psi and 2.0 psi.

5. A method according to Claim 3 wherein the steps of pretreating and polishing occur at a temperature substantially between 10 degrees Centigrade and 30 degrees Centigrade.

6. A method according to Claim 2 wherein the pretreating comprises sputtering to remove said film.

7. A method according to Claim 6 wherein the sputtering occurs in an argon chamber.

8. A method according to Claim 1 wherein the relative movement is rotary movement.

9. A method according to Claim 1 wherein the relative movement is orbital movement.

10. A method according to Claim 4 wherein the pretreating comprises creating relative motion between said film and a polishing surface at a second pressure which is higher

than said first pressure.

11. A method according to Claim 10 wherein said second pressure is substantially between 3 psi and 10 psi.

12. A method according to Claim 11 wherein said second pressure is between 5 psi and 6 psi.

13. A method according to Claim 11 where the step of polishing the film occurs at a temperature between 10 degrees Centigrade and 30 degrees Centigrade.

14. A method according to Claim 1 wherein the step of polishing the film occurs in the presence of a substantially non-abrasive polishing solution.

15. A method according to Claim 14 wherein said non-abrasive polishing solution contains less than one percent by weight of polishing abrasive.

16. A method according to Claim 11 wherein the step of polishing the film occurs in the presence of an abrasive polishing solution.

17. A method according to Claim 11 wherein the step of pretreating occurs for approximately one to twenty seconds.

18. A method according to Claim 2 wherein the step of pretreating occurs in the presence of an abrasive polishing solution.

19. A method according to Claim 18 wherein the step of pretreating occurs at a temperature between 10 degrees Centigrade and 30 degrees Centigrade.

1 20. A method for polishing a metallized surface on a workpiece, said metallized
2 surface having a polish-resistant film thereon, said method comprising;
3 sputtering said metallized surface to substantially remove said film; and
4 polishing said metallized surface by creating relative motion between said

5 metallized surface and a polishing surface at a first pressure in the presence of a substantially
6 non-abrasive polishing solution.

21. A method according to Claim 20 wherein said relative motion is primarily non-orbital motion of the polishing pad.

22. A method according to Claim 20 wherein said metallized surface is copper.

23. A method according to Claim 22 wherein said sputtering takes places in an argon chamber.

24. A method according to Claim 23 wherein said first pressure is substantially between 0.1 and 3.0 psi.

25. A method according to Claim 24 wherein said first pressure is substantially between 0.5 psi and 2.0 psi.

26. A method according to Claim 22 wherein the step of polishing takes place in the presence of a non-abrasive polishing solution.

27. A method according to Claim 26 wherein said polishing solution contains less than one percent by weight of abrasive polishing material.

1 28. A method for polishing a metallized layer on a workpiece, said metallized layer
2 having a polish-resistant film thereon, said method comprising;
3 polishing said film by creating relative motion between said film and a polishing
4 surface at a first pressure until said polish-resistant film is substantially removed; and
5 polishing said metallized surface by creating relative motion between said
6 metallized surface and a polishing surface at a second pressure in the presence of a substantially
7 non-abrasive polishing solution.

29. A method according to Claim 28 wherein said relative motion comprises primarily non-orbital motion of the polishing pad.

30. A method according to Claim 28 wherein said metallized layer is copper.

31. A method according to Claim 30 wherein said second pressure is substantially between 0.1 psi and 3.0 psi.

32. A method according to Claim 29 wherein the non-orbital motion comprises rotational motion.

33. A method according to Claim 29 wherein the non-orbital motion comprises linear motion of a linear belt-type polishing pad

34. A method according to Claim 30 wherein said first pressure is substantially between 3 psi and 10 psi.

35. A method according to Claim 28 wherein the first and second polishing steps are performed with different polishing heads.

36. A method according to Claim 29 wherein the different polishing heads are on a carousel apparatus.

37. A method according to Claim 28 wherein the first and second polishing steps are performed on the same polishing station.

1 38. A method for polishing a metallized surface on a workpiece, said metallized
2 surface having a polish-resistant film thereon, said method comprising;
3 polishing said metallized surface by creating relative movement between said
4 metallized surface and a polishing surface at a first polishing velocity to substantially remove
5 said film; and
6 polishing said metallized surface by creating relative movement between said
7 metallized surface and a polishing surface at a second, reduced polish velocity in the presence
8 of a polishing solution.

39. The method of Claim 38, wherein the first polish velocity is two to three times the second polish velocity.

40. The method of Claim 39, wherein the relative movement between said metallized surface and a polishing surface comprises rotational motion of the polishing surface.

41. The method of Claim 39, wherein the relative movement between said metallized surface and a polishing surface comprises primarily linear motion of a linear belt-type polishing pad.

1 42. A method for polishing a metallized surface on a workpiece, said metallized
2 surface having a polish-resistant film thereon, said method comprising;

3 chemically stripping said polish-resistant film from said metallized surface using an
4 etching solution; and

5 polishing said metallized surface by creating relative movement between said
6 metallized surface and a polishing surface in the presence of a polishing solution.

43. The method of claim 42, wherein said step of chemically stripping comprises dipping the workpiece in a bath of the etching solution.

44. The method of claim 42, wherein the step of chemically stripping comprises polishing said metallized surface by creating relative movement between said metallized surface and a polishing surface in the presence of the etching solution.

45. The method of claim 42, wherein the etching solution comprises dilute inorganic acid.

46. The method of claim 42, wherein the etching solution comprises dilute organic acid.